1.01 STUDY PURPOSE AND GOALS

The Wisconsin Department of Transportation (WisDOT), in cooperation with the Federal Highway Administration (FHWA), undertook this comprehensive study to review and analyze transportation needs along USH 51 from Burma Road in the Village of McFarland to the east side of the City of Stoughton. The study also incorporates a roadway deficiency analysis for USH 51 from Stoughton to IH 39/90.

Several considerations impacted the study:

- Traffic volumes and traffic congestion have increased. This is apparent during the morning and evening peak hours.

- The corridor needs to provide safe and efficient travel for all current and potential users, including regional and local motorists, farmers, bicyclists, pedestrians, and transit riders. Existing facilities were not designed to support this diversity of use.

- Under a separate study, WisDOT is examining the needs of USH 51 on a segment north of this project.

The goals of the USH 51 Needs Assessment are to:

- Inventory existing corridor facilities and environmental resources.
- Collect and analyze data on crash history, land use, and traffic volumes.
- Project future land use and traffic volumes.
- Identify and involve current and potential corridor users.
- Identify and involve affected communities.
- Identify and involve affected governments and agencies.
- Articulate existing and future corridor needs.

Because this study is strictly a needs assessment, it neither proposes nor evaluates possible corridor improvements. WisDOT will determine whether the deficiencies identified in this study warrant further investigation.

1.02 STUDY LIMITS

The study performs a full needs assessment for the USH 51 corridor between Burma Road in the Village of McFarland and the eastern limits of the City of Stoughton, a distance of about 10 miles. While the study focuses on needs specific to the corridor, it also investigates how the surrounding land uses and transportation facilities influence and are influenced by the corridor. The USH 51 corridor must be considered in the context of the communities that it serves and the environments through which it passes.

The study also performs a deficiency analysis of the roadway between the eastern limits of Stoughton and the interchange of USH 51 with IH 39/90, a distance of about 6 miles. This deficiency analysis only evaluates the adequacy of existing operating and geometric conditions.

Figure 1.02-1 shows the approximate extent of both study components. Efforts were made to engage members of the public throughout the five towns and two municipalities through which the corridor passes. Three newsletters and a Transportation Needs Survey were sent to approximately 18,000 households and businesses in the City of Stoughton, Village of McFarland, and Towns of Albion, Dunkirk, Dunn, Pleasant Springs, and Rutland. Section 2 of this report includes a discussion of public outreach and jurisdictional coordination.

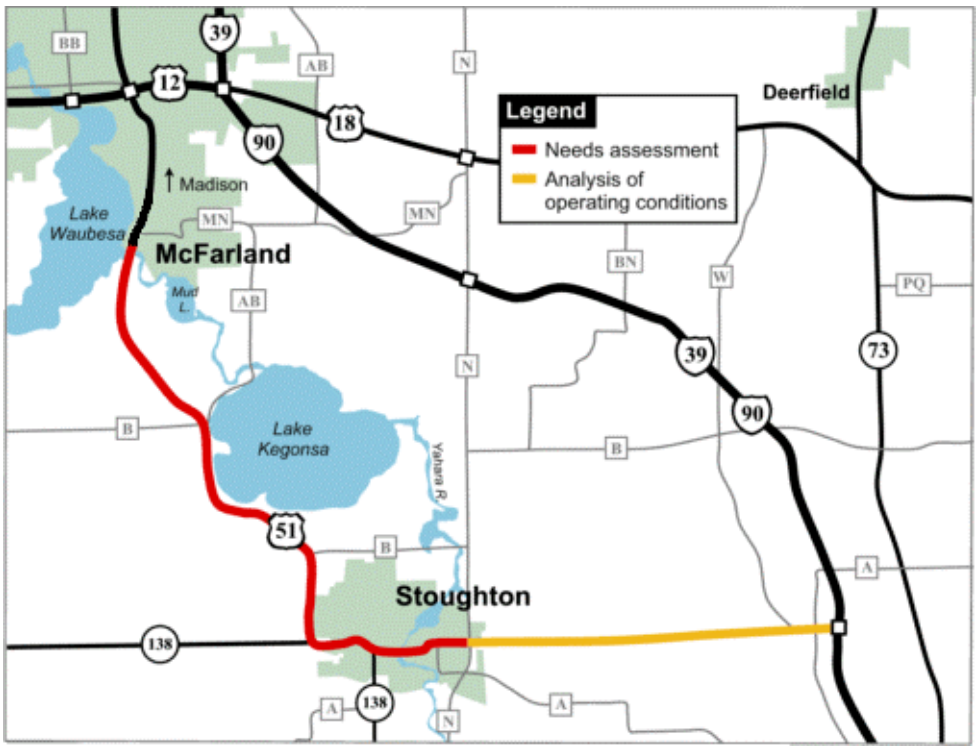

Figure 1.02-1 USH 51 Study Corridor

1.03 STUDY PROCESS

A. Data Collection

To assess the needs of the USH 51 corridor, the study team collected and analyzed a variety of data.

The study team obtained the following data from existing sources:

- Available as-built roadway drawings
- Available pavement condition reports
- Bridge sufficiency reports
- Signal phasing, timing, and coordination
- Daily traffic volumes
- Crash summary data
- Origin-destination study reports
- Intersection turning-movement counts
- Intersection geometries

The study team obtained the following data from the field:

- Intersection turning-movement counts
- Intersection geometries
- Average travel times
- Daily traffic and classification counts

B. Public Involvement

Coordination with corridor users and affected communities is a critical component of this study process and the Needs Assessment in particular. Figure 1.03-1 shows the public involvement schedule for the study. Section Two of this report describes all public involvement activities undertaken, including:

- Technical Advisory Committee
- Policy Advisory Committee
- Project Web site
- Three newsletters
- One transportation needs survey

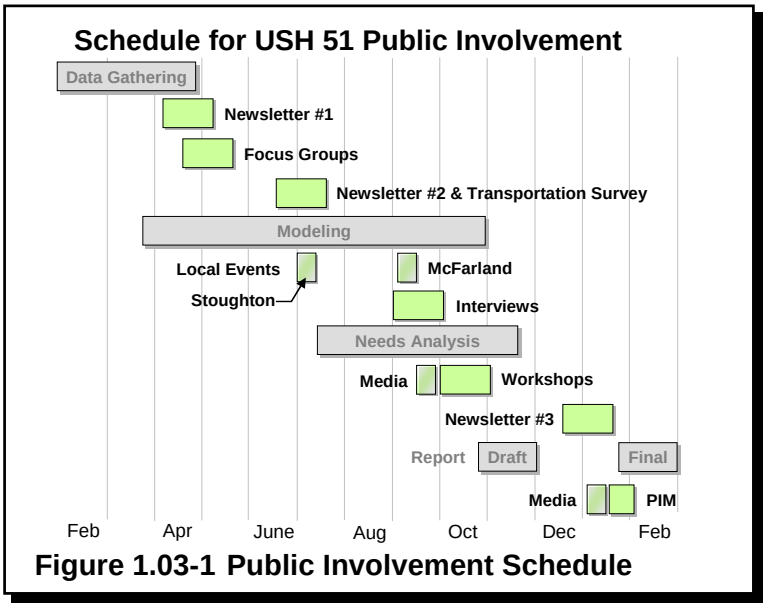

Figure 1.03-1 Public Involvement Schedule

- Four focus groups
- Information booth at two community functions
- Three workshops
- Nine individual interviews
- One public information meeting

C. Demand and Operations Modeling

The study team used traffic modeling to assist in identifying the existing and future needs of the corridor with respect to traffic operations. The modeling process included two stages: Demand Modeling and Operations Modeling.

1. Demand Modeling

Demand modeling was the first stage of traffic modeling performed. It provides information on how much traffic is likely at various points along the corridor and what travel patterns can be expected. The study team used TRANPLAN software for the demand modeling and began with the current Madison Area Metropolitan Planning Organization (MPO) model of Dane County. The TRANPLAN model was then enhanced to provide greater detail for the Stoughton and McFarland areas. The enhancements considered the latest available traffic and roadway information and adjusted for existing corridor conditions. The study team converted the TRANPLAN model from MPO's Average Daily Traffic model to AM and PM peak hour models so traffic volumes and travel pattern information could be used in the operations modeling for existing conditions. Once the enhancements were complete and the model was using hourly volumes, the study team extracted a portion of the model surrounding the study corridor. After extraction, the existing conditions models were calibrated to 47 ground count locations for the AM and PM peak hours. The models were calibrated to within 8% to 10% overall for both time periods.

After the existing conditions modeling in TRANPLAN, the study team simulated future conditions. Future land uses throughout the corridor and surrounding areas were projected using Growth Management scenarios discussed fully in Section 3.04. The study team used this information to calculate the expected increase in demand because of the future development. The increases in traffic were calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual (6th Edition). After the traffic demand was calculated, the future trips were distributed in the TRANPLAN models. The traffic volumes and travel patterns for future conditions modeled by TRANPLAN were then used in the future operations modeling. Appendix A contains a more-detailed description of the TRANPLAN modeling process.

2. Operations Modeling

Operations modeling was the second stage of traffic modeling performed. It provides information on how well the corridor handles traffic and can pinpoint locations of concern. The study team used Paramics software for the operations modeling. The Paramics model is built to mirror the TRANPLAN model so that the TRANPLAN results for the existing and future conditions can be used by Paramics directly. Paramics is able to model operations at a more precise level than TRANPLAN and can provide data such as average travel speeds, average delay per vehicle, and maximum queue length. This information is used to evaluate the existing and future operations of the study corridor.

1.04 STUDY SCHEDULE

The USH 51 Needs Assessment began in February 2003 and will conclude in February 2004. At that time, WisDOT will determine if corridor needs warrant further study.

Figure 1.04-1 shows the overall Needs Assessment schedule. At the beginning of the project, the study team focused on collecting data and identifying growth scenarios. Using this information, the study team then modeled corridor demand and operations.

Throughout the yearlong process, the study team emphasized communication with the public and interaction with project stakeholders. Figure 1.03-1 shows a detailed schedule of public involvement activities. The concerns identified through these steps, as well as through public interaction, provided the basis for the needs articulation.

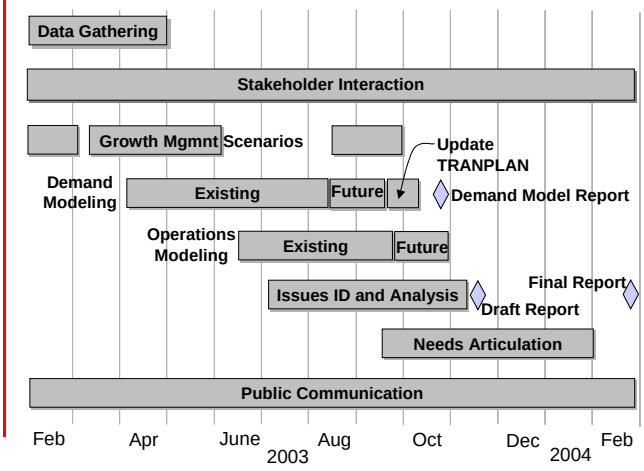

Figure 1.04-1 Overall Study Schedule

1.05 USH 51 IN THE CONTEXT OF DANE COUNTY PLANNING PROCESSES

The USH 51 Needs Assessment is occurring at the same time as a large number of other land use and transportation planning studies (see Figure 1.05-1). These include:

1. USH 51 Stoughton Road Needs Assessment and Alternatives Analysis. This project conducted by WisDOT is an examination of the segment of USH 51 located directly north of the USH 51 Stoughton-McFarland Study segment – from McFarland north to the IH 39/90/94 interchange. This Needs Assessment concluded in 2003, and the Alternatives Analysis will begin in 2004. The need to balance regional traffic needs with local business and neighborhood access will be a key aspect of this challenge, as is growing congestion at the USH 12/18 Beltline interchange and USH 151 East Washington Avenue intersection.

2. West Beltline/Verona Road Corridor Study. This project conducted by WisDOT plans for the long-term future of the West Beltline Highway between Todd Drive and University Avenue, and Verona Road/USH 151 between the West Beltline and CTH PD. Particular attention is being directed at alternative interchange configurations at the West Beltline/Verona Road interchange. A Draft Environmental Impact Statement (DEIS) is now being prepared for the Study.

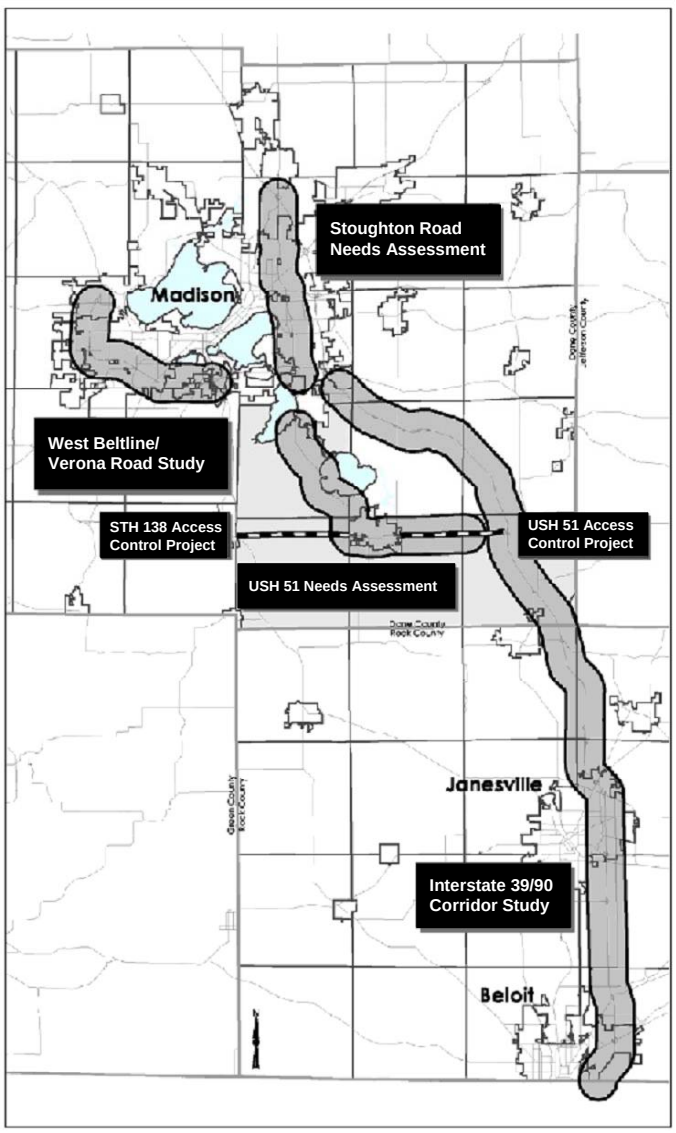

Figure 1.05-1 Related WisDOT Studies

3. Interstate 39/90 Study. This project conducted by WisDOT examines the need to convert the IH 39/90 corridor between Madison and the Illinois State line from a four-lane route to a six-

lane route. Particular attention is placed on the configurations of interchanges in Janesville for STH 26 and USH 14, and for the interchange with IH 43 in Beloit.

4. Access Control Projects of STH 138 and USH 51. These separate projects, under the auspices of WisDOT, involve identifying existing driveways and issuing authorizations to their property owners. They cover six miles of USH 51 east of Stoughton to IH 39/90 and 6 miles of STH 138 between USH 51 and USH 14.

The following bullets describe transportation plans in and around the study area:

- Comprehensive Plans for Stoughton, McFarland, and Oregon. These incorporated jurisdictions are each about halfway through updates of their adopted comprehensive plans. The purpose of these plans is to comply with the new state comprehensive planning law and to forward planning recommendations for land use, transportation, intergovernmental relations, utilities, community facilities, housing, economic development, community character and natural resource protection through the year 2025. When adopted, these plans will guide annexation, zoning, land division, official mapping, and public investment decisions.

- Southeast Dane County Comprehensive Plans. The Towns of Albion, Blooming Grove, Deerfield, Dunkirk, Pleasant Springs, and Rutland, the Village of Brooklyn, and the City of Edgerton have recently embarked on their comprehensive plan updates – also designed to comply with the new, state comprehensive planning law and to forward planning recommendations for land use, transportation, intergovernmental relations, utilities, community facilities, housing, economic development, community character, and natural resource protection through the year 2025. When adopted, these plans will guide annexation, zoning, land division, official mapping and public investment decisions.

- Dane County Land Use and Transportation Plan. This plan, adopted in 1997, recommended the expansion of USH 51 between McFarland and CTH B. It also identified a possible location for a USH 51 bypass of Stoughton. These issues are likely to be revisited as part of the Dane County Comprehensive Plan (described below).

- Dane County Comprehensive Plan. Dane County is about one year into its three-year effort to update its comprehensive plan. This plan is also designed to comply with the new state comprehensive planning law, and to forward planning recommendations for land use, transportation, intergovernmental relations, utilities, community facilities, housing, economic development, community character, and natural resource protection through the year 2025. When adopted, this plan will guide annexation, zoning, land division, official mapping, and public investment decisions.

- City of Madison Comprehensive Plan. Madison is also about one year into its three-year effort to update its comprehensive plan. This plan is also designed to comply with the new state comprehensive planning law, and to forward planning recommendations for land use,

transportation, intergovernmental relations, utilities, community facilities, housing, economic development, community character, and natural resource protection through the year 2025. When adopted, this plan will guide annexation, zoning, land division, official mapping, and public investment decisions.

The land use projections used in this USH 51 Needs Assessment are based, in part, on the adopted plans for the City of Stoughton, Village of McFarland, Town of Dunn, Town of Dunkirk, Town of Rutland, Town of Pleasant Springs, and the Town of Albion. These projections are also based on adopted zoning maps and public utility plans of these jurisdictions. The land use plan components of each of these local plans are not yet available in either draft or final form and, therefore, were not used by this Needs Assessment.